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Infant crying and abuse

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Child abuse and neglect are important causes of child morbidity and death. We assessed potentially detrimental parental actions induced by infant crying in 3259 infants aged 1–6 months, in the Netherlands. In infants aged 6 months, 5.6% (95% CI 4.2–7.0) of parents reported having smothered, slapped, or shaken their baby at least once because of its crying. The risks of detrimental actions were highest for parents from non-industrialised countries, those with either no job or a job with short working hours, and those who judged their infant's crying to be excessive. Clinicians should be aware of the risks of abuse in children known to cry a lot and should target interventions at parents to help them cope with this crying.

Child maltreatment—ie, abuse and neglect—is an important cause of child morbidity and death. UNICEF has estimated that this maltreatment leads to 3500 deaths per year in Organisation for Economic Cooperation and Development member states. Of the deaths due to child maltreatment, more than 800 are infants aged 0–11 months—resulting in an annual mortality rate of 6.1 per 100 000.¹ Furthermore, the total number of cases of maltreatment is estimated to be 150–2000 times higher than the number of deaths due to maltreatment.¹ In California, the annual rate of hospitalisation due to assault and neglect is 49 per 100 000 infants, of which 62% are because of battering. These rates are highest for infants aged 0–2 months (76 per 100 000) and 3–5 months (62 per 100 000), and are lower for children aged 9–11 months (22 per 100 000).²

Several factors are typically associated with child maltreatment—eg, low socioeconomic status, a cultural background permissive to violence, family breakdown, social isolation, child morbidity, parental mental ill-health and substance misuse, and parents who were abused during their own childhood. However, the events that lead to maltreatment are complex and little understood.² Findings of case reports show that inconsolable infant crying sometimes provokes fatal abuse.³ Furthermore, crying is most frequent in the first 3–4 months of life;⁴ the median age of infants with shaken impact syndrome is 2.2 months (84% <4 months).⁵ Our aim was to estimate the prevalence in the Netherlands of parental actions provoked by infant crying that can threaten child health, and to determine specific risk groups at which to target preventive measures.

In 1997 and 1998, child-health doctors and nurses interviewed parents of a community-based sample of

3345 infants from the Netherlands, stratified by region, degree of urbanisation, and age (3–5, 11–15, and 22–30 weeks; later categorised as 1, 3, and 6 months). Parents were asked about infant crying and their background characteristics. The sample was representative of the entire Dutch population with respect to family size, proportion of one-parent families, and parental educational level. However, families living in the biggest cities were slightly under-represented because of the stratification procedure.⁴ The study was approved by the Netherlands Organisation for Applied Scientific Research TNO medical ethical committee, and verbal informed consent was obtained from the parents.

Parents of 3259 infants filled out an anonymised questionnaire about their actions to stop infant crying, which they passed to the researcher in a sealed envelope, before being interviewed.⁴ Parents were asked about use of smothering, shaking, and slapping the infant—eg, “Have you ever slapped your infant to reduce its crying?” These actions were incorporated in a list of 20 others—eg, the use of a baby's dummy, carrying the infant.⁶

We assessed the cumulative rates of smothering, slapping, and shaking and differences in overall rates by hospitalisation after birth, parity, family composition, urbanisation, ethnic origin, sex, parental employment, parental lifestyle, and parental reports of infant crying. We based this last item on reported duration—ie, crying more than 3 h per day on more than 3 days of the preceding week⁴—and on whether parents were currently worried about the crying or had at any time judged it as excessive.⁴ Employment included the number of hours worked by both parents in the period just before pregnancy leave; urbanisation included the number of residential addresses around the family's

Infant age (n=3259)	Detrimental action			
	Smothering	Slapping	Shaking	Any
1 month	1.10% (0.48–1.72)	0.55% (0.11–0.99)	1.01% (0.42–1.61)	2.20% (1.33–3.08)
3 months	1.32% (0.63–2.00)	1.32% (0.63–2.00)	1.32% (1.07–2.70)	3.67% (2.54–4.80)
6 months	1.63% (0.88–2.37)	1.90% (1.09–2.70)	3.35% (2.29–4.40)	5.60% (4.25–6.96)

Data are rate (%) and 95% CI.

Table 1: Cumulative prevalence rates and 95% CIs of detrimental actions undertaken by parents to stop the crying of their child

	Number of infants affected/ total number*	Crude odds ratio (95%CI)	p	Adjusted odds ratio† (95%CI)	p
Sex			0.52		0.49
Male	67/1654 (4.1%)	1.00		1.00	
Female	58/1605 (3.6%)	0.89 (0.62–1.27)		0.88 (0.61–1.26)	
Hospitalisation after birth			0.11		0.07
No	112/2773 (4.0%)	1.00		1.00	
Yes	12/477 (2.5%)	0.61 (0.34–1.12)		0.57 (0.31–1.05)	
Parity			0.13		0.14
First child	54/1622 (3.3%)	1.00		1.00	
Subsequent child	71/1629 (4.4%)	1.32 (0.92–1.90)		1.31 (0.91–1.88)	
Family composition			0.019		0.031
Two biological parents family	117/3180 (3.7%)	1.00		1.00	
One parent	4/41 (9.8%)	2.83 (0.99–8.07)		2.58 (0.90–7.39)	
Other (adoption, foster-family, biological parent and other partner, unclear)	4/38 (10.5%)	3.08 (1.08–8.82)		2.97 (1.03–8.55)	
Urbanisation			0.013		0.014
Low-medium	82/2428 (3.4%)	1.00		1.00	
High	43/805 (5.3%)	1.61 (1.11–2.36)		1.61 (1.10–2.35)	
Ethnic origin			<0.0001		<0.0001
Dutch	91/928 (3.1%)	1.00		1.00	
Former colony (Surinam/Netherlands Antillean)	1/46 (2.2%)	0.69 (0.09–5.08)		0.67 (0.09–4.91)	
Labour migrant (Turkish/Moroccan)	13/64 (20.3%)	7.95 (4.17–15.13)		8.43 (4.38–16.21)	
Other non-industrialised	13/101 (12.9%)	4.61 (2.48–8.55)		4.57 (2.45–8.53)	
Other industrialised	7/120 (5.8%)	1.93 (0.88–4.26)		1.91 (0.86–4.22)	
Employment (>16 h per week)			<0.0001		<0.0001
At least one parent	112/3147 (3.6%)	1.00		1.00	
Neither parent employed	13/108 (12.0%)	3.71 (2.02–6.82)		3.86 (2.09–7.15)	
Maternal smoking after pregnancy			0.24		0.18
No	103/2544 (4.0%)	1.00		1.00	
Yes	22/710 (3.1%)	0.76 (0.47–1.21)		0.72 (0.45–1.16)	
Type of milk feeding			0.88		0.42
Breast only	31/854 (3.6%)	1.00		1.00	
Mixed	15/355 (4.2%)	1.17 (0.62–2.20)		0.94 (0.50–1.79)	
Formula only	79/2046 (3.9%)	1.07 (0.70–1.63)		0.76 (0.48–1.19)	
Crying >3 h on >3 days, past week			0.81		0.65
No	111/3088 (3.8%)	1.00		1.00	
Yes	5/146 (3.4%)	0.89 (0.36–2.22)		1.24 (0.49–3.12)	
Parents worried about crying			0.001		<0.0001
No, never	104/2982 (3.5%)	1.00		1.00	
Yes, sometimes / frequently	21/268 (7.8%)	2.35 (1.45–3.83)		3.05 (1.84–5.04)	
Parents judged crying excessive			<0.0001		<0.0001
No	42/1887 (2.2%)	1.00		1.00	
Yes	83/1367 (6.1%)	2.84 (1.95–4.14)		2.63 (1.79–3.85)	
Total	125/3259 (3.8%)				

*Data for parental actions were missing for 86 parents; numbers do not always add up to 3259 because of missing values on background characteristics. †Adjusted for infant age.

Table 2: Prevalence of at least one of three parental actions induced by infant crying that are detrimental to infant health (smothering, slapping, and shaking)

living address; and ethnic origin was categorised as non-Dutch if the child or a parent was born outside the Netherlands. We calculated crude odds ratios for detrimental action and adjusted for infant age. We repeated these analyses for infant crying variables, restricting ourselves to infants aged 1 and 3 months, since crying can change after this age.⁴

In infants aged 6 months, nearly 6% of parents reported taking at least one action to stop infant crying that might lead to child abuse (ie, smothering, slapping, or shaking) of whom one in five had taken more than one of these three actions. Cumulative rates rose steadily from 1 to 6 months and were highest for shaking (table 1). Rates were significantly higher for infants not living with both their biological parents; those living in urbanised areas; those of Turkish or Moroccan descent, or from another

non-industrialised country; those with unemployed parents; and those with parents who worried about the crying, or had at any time judged it to be excessive (table 2). After Bonferroni adjustment for multiple comparisons, only differences by age, ethnic origin, parental employment, and the two measures of crying remained significant. After multivariable adjustment, only infant age, ethnic origin, and crying history were associated with high rates, with risks similar to those adjusted only for age (data not shown). Risks for infants aged 1 and 3 months were similar (data not shown).

Our findings show that, to stop infant crying, some parents take actions that can threaten the child's health and be regarded as abuse. Since our data relied on parental self-report, under-reporting could have affected our results. However, data were obtained anonymously,

probably reducing this drawback. We cannot exclude effects of selective reporting completely, but such effects are unlikely to account for such large differences.

The provocative effect of infant crying on abuse occurs in the first 6 months of life when most non-accidental injuries happen.^{2,5} The substantial rise in shaking between 3 and 6 months of age accords with battering as the main cause of hospitalisation and death in this age-group.² Furthermore, groups at highest risk of taking health-threatening action and of child maltreatment are immigrants, unemployed parents, and families that include non-biological parents.¹ The results of our study could provide the link between data on infant crying and infant maltreatment, supported by case-studies on fatal abuse that seemed to be induced by infant crying.⁴ Further information on the processes leading to fatal child abuse is needed.

Clinicians and other health-care providers working with parents of infants should be aware of the risks for young children associated with their crying, especially if parents report a history of what they regard to be excessive crying and they are in a social position that could put pressure on the family situation.⁶ The actual duration of crying at a given moment seems to be less relevant than the parents' perception of the crying of their infant in the long term. Furthermore, our results show that the number of infants implicated is substantial, highlighting an urgent need to teach carers of infants how to cope adequately with infant crying, including telling parents that the average 1-month-old baby cries 1.5 h per day,⁴ asking questions about crying during routine well-baby visits, and providing additional support services and follow-up for those at risk.

Contributors

S A Reijneveld had the original idea for the project, wrote the study protocol, and coordinated the study. M F van der Wal participated in the development of the questionnaire. S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick discussed the protocol and formulated the final design. E Brugman supervised the data collection. S A Reijneveld and E Brugman did the statistical analyses, which were discussed by S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick. S A Reijneveld wrote the final manuscript, which was discussed, edited and revised by S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick. S A Reijneveld had full access to all the data in the study and had final responsibility for the decision to submit it for publication.

Conflict of interest statement

We declare that we have no conflict of interest.

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